



Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at <http://about.jstor.org/participate-jstor/individuals/early-journal-content>.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact support@jstor.org.

FLORIDA BURROWING OWL
(*Steotyto floridana floridana*, Ridgway)

C. J. PENNOCK
KENNETT SQUARE, PA.

Never having been in Southern Florida until the past winter, 1921-22, I was unacquainted with the prairie region of that section of the state. During a recent stay at Punta Gorda at the head of the great sheet of salt water Charlotte Harbor, with headquarters there from February 4th to April 18th, 1921, several excursions were made to two of these low, treeless plains. The nearest is north-east about eight miles; the other 20 miles east. Both tracts are of small area; the former containing perhaps three square miles of irregular contour and traversed by at least two public roads; the other is three or four miles long and varies from one-half to two miles or more in width and has a railroad and a much traveled highway traversing it for most of its length. The soil is quite sandy and except for occasional tracts of a harsh, fine grass little vegetation is sustained except the abundant crop of Scrub Palmetto (*Sabal serrulata*). So far as the public roads may have influence on the presence of these interesting birds it was found that most of the birds under observation seemed to prefer a close proximity thereto. No explanation is evident. The roads were not appreciably higher than the surrounding district, all of which was lower than the adjacent timbered tracts and by the testimony of numerous residents, during the rainy season — June, July, and August — these “prairies” are subject to being, and usually are, flooded for a considerable time, so that the Owls must rear their young before the rains prevail. In this connection it may be stated that a small and rather scattered colony of the Owls was discovered in an open tract that had formerly been timbered but from which the trees had been cut a good many years and barring a very few scattered, stunted, pine saplings no growth appeared higher than the low scrub Palmetto so abundant all over this portion of Florida.

It is the general opinion among the limited number of resident people who are at all acquainted with this owl that they either *hibernate* or move away somewhere during the winter season. The only evidence found bearing on the point was fresh excavating of earth in February and early March which was suggested as following their period of rest and that during

the rainy season the owls could not maintain themselves where the young are reared. That some new burrows are made in the Spring I have positive evidence but this would naturally follow any increase in the population of a colony. Fresh digging at an old burrow might indicate house-cleaning which I believe was usually the case but I was not on hand early enough in the season to determine as to their place of residence in the early winter nor where they put up during the rainy season. It is declared by a few people that Steotyto does not excavate a home for himself but makes use of the burrow of the so-called Gopher (*Testudo carolina*), the rather common highland Tortoise. This is without foundation in fact so far as my experience went. The two animals do not frequent the same sort of environment and the character and form of their burrows differ materially. Of course the "Happy Family" myth is sometimes advanced and warnings given of the probable presence of rattlesnakes as well as of the turtles. Needless to state neither of these co-partners was ever seen at or in the same sort of surroundings as were sought by the owls.

The most striking characteristic of these birds was extreme, gentle fearlessness. With the first pair under intimate inspection the bird believed to be the female usually permitted my approach within four paces. Not infrequently I walked rapidly within five or six steps of the entrance to the burrow, where this bird sat staring at me with her large clear-yellow rings, then by slowly moving I could frequently stand within six feet of the bird and carry on a somewhat one-sided conversation, but which at times was responded to with a rather musical, throaty, rippling trill that resembled the mellow "cuh - cuh - cuh - cuh" spring call of the Flicker when heard at a considerable distance. The mandibles were not seen to move when this call was made but a flutter of the feathers of the throat was visible. The mate of this friendly bird would fly off when I came within about 30 yards of the mound whereon the pair were usually to be found. In most of the burrows observed both birds were seen at the entrance, and generally within a foot or two of each other.

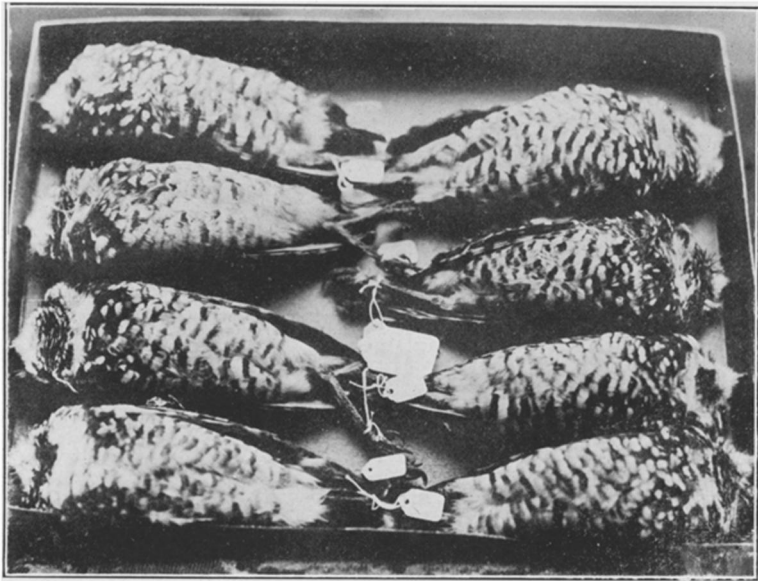
The first birds were seen February 19th and at their burrow no fresh earth had then been thrown out. On February 23rd a colony of six or eight pairs was visited and here was evidence of spring housecleaning. The old mounds were well packed down by rains and fresh earth thrown out. At this time and

until I suspected egg-laying had commenced nearly all of the birds continued to be gentle and permitted of rather close approach. After about the 12th of March both birds of the pairs became more wild, flying when the intruder came within 30 to 40 yards of where they were standing.

Not nearly all of the birds when closely approached would extend their quaint courtesy made by a sudden bending of the tarsal joints, but with some individuals this was repeated frequently—at times several bows in a minute, more often once or twice only or singly with considerable intervals. When alarmed by our approach, as they stood by the burrows, with a single exception they sought safety by flight. In the one instance referred to the male(?) had flown earlier and on coming within five or six paces the female(?) retired into the burrow but reappeared within two or three minutes and this performance was repeated three or four times and finally she remained outside the burrow. One bird shot on the mound fell or struggled into the burrow and was found dead within arms-length of the entrance. The only other instance of a bird being found in a burrow was discovered in digging out for eggs when an old bird was trapped at the nest cavity, where there were three chicks but a few hours old and two eggs pipped for hatching. The flight of the birds is of a part with their other quaint and unusual manners: a rapid get-away, barely skimming the ground or low vegetation—scrub Palmetto frequently, rarely any bushes—no rapid wing-beats after the start but as if timed to slow music for a short distance, 15, 20, or 30 yards perhaps, then an abrupt rise of 8 to 10 or 12 feet followed by a gentle coasting downward to gain the former low flight level and if the course is protracted this straightaway—rise—coasting may be repeated several times and at times, rarely I think, the mellow throat chuckle may be heard while the bird is in flight. Frequently the more gentle bird of a pair, and there was usually a decided difference, would make a short flight—30 to 50 yards—when first alarmed and soon return in close proximity to the nest and the intruder. This occurred before we suspected them of having eggs as well as when on later visits the burrow was dug out and eggs were found.

The pair under most constant observation were located in an open lot about 30 yards from a used street and two dwellings were within less than 200 yards of the burrow. My visits to this pair were at various hours of the day from a half hour before

sunrise to early twilight and probably ten calls were made. Both birds were at or near the entrance on every occasion. The one bird—male (?)—always flew by the time we were within 30 or 40 yards of them and never returned during the call and always the mate remained until we came within five or six yards; then if she (?) was in amiable mood she would greet the caller with a cheery twitter or a winsome courtesy and with exceeding modesty turn her head aside, not with the appearance of fear, for the next moment she would gaze placidly



SKINS OF BURROWING OWL

directly at the caller without moving foot or wing. Repeatedly I have stood within ten feet of her for five minutes and on one visit with Mrs. Pennock we talked of and to the bird and walked about her at a distance not exceeding twelve feet for at least ten minutes. At another time I took twelve snap-shots of her in glaring mid-day sunlight and none was at a distance exceeding nine feet while at times the camera was held within six feet of the standing bird. If she took flight it was for only a few yards and on walking back of her she returned at once to the entrance mound and except for one time earlier referred to she never retreated to the burrow. In moving a short distance and but little alarmed this bird would sometimes *walk*, at other times a few

hops were resorted to or a combination *flying-hop* would sometimes hasten the departure when but a short distance was sought.

On my second visit to this pair a slender green snake, recently killed, was found lying extended on the inclined entrance to the burrow with neck and head crushed. This was the only evidence I ever detected of any food other than beetles being eaten by these owls.

It may be worth recording that the feathers of two birds taken were strongly scented with the odor of skunk and the little "Civet Cat" Spotted Skunk (*Spilogale putorius*) is said to be numerous throughout the region.

Their stomachs were found to be filled with the softer parts of four beetles and the wings were to be seen discarded about the entrance to the burrows and *no pellets* were ever found. I was not able to determine whether or not they fed at night. The birds have keen vision in the brightest sunlight and a "wild" bird when once alarmed will sometimes take flight when approached at a distance of 40 or 50 yards.

The nesting sites as stated were always in the open—entirely removed from any trees or bushes, grass and palmetto roots serving as an aid to prevent the very sandy soil from caving in on the burrows. The burrows descended quickly in an abrupt incline, usually from the summit of the mound which in most instances was six to eight inches higher than the surrounding ground and frequently two feet or more across the base. The opening was rather oval in form, seven to eight inches in the perpendicular and four to five inches across contracting towards the lower end of the incline and becoming more circular with a diameter of from four to five inches, the exact size being difficult to determine on account of the crumbling nature of the soil. From entrance to nesting chamber the burrows we excavated varied in length from five and one-half to nine feet and the length was usually carried in a rather direct line but two at least had decided angles in their courses while another had two turns, one of which was almost a right angle.

The depth of a burrow was greatest so far as could be determined at or near the foot of the entrance incline, then with but little variation until near the nesting chamber when there was an appreciable rise. The cavity for the nest was a rather spherically formed chamber making the end of the burrow and eight to nine inches in diameter. The *nest* was a bed composed (a) of dry cow-dung broken into small pieces or (b) dry grass or

Palmetto roots or grass stems broken into short pieces or shreds or (c) a combination of these different materials. The bulk varied considerably from about a pint to more than double that amount. The top of the nest cavity in one instance was but eight inches below the surface of the ground and they varied from that depth to not exceeding sixteen inches. One burrow in the preceding season had been dug out for its entire length, was nine feet long, 12 to 15 inches deep and a burrow that we opened was dug at right angles to and passed under this former burrow.

A pair of owls were seen standing at their doorway on April 8th and on digging we found an unfinished tunnel four feet long which was within 20 yards of where we had dug out a burrow four days earlier. In neither instance were eggs found. This was the only information obtained regarding the speed of the birds at their excavating and is of course indefinite as to actual time engaged at the work. At an isolated occupied burrow a second excavation was found about 15 yards from the home site and was evidently being used when found, as fresh earth was at the entrance and rejected parts of beetles were about the opening. I believed it to be freshly dug but after two weeks observation it was found to be but three feet long with no nest chamber. I was unable to determine whether it had been abandoned earlier as a nesting site or if it might have been an extra resort for one of the birds when not brooding although no other such arrangement was seen elsewhere.

On April 1st at the burrow most often visited a broken egg shell was found on the ground a few feet outside the entrance and I concluded the chicks had hatched.

On April 15th this burrow was dug out and found to contain three eggs, two of which were about two-thirds incubated and the other much fresher.

Under date of April 15th the following is an extract from my note book: "Both birds were at the entrance when I approached. The male (?) flew as usual at 50 yards or so; the female stood her ground while I photographed her at about five steps. On digging found the tunnel not over six feet long, nearly straight, nest entirely of cow-dung, about twelve inches from surface of ground to bottom (of nest cavity). . . . Contents, three eggs . . . took photos of these eggs *in situ*. The female seemed less shy then when I saw them on April first and I photographed her from three places at about 15 feet distance. Several times as she flew she 'twittered' plaintively and always

made short flights. Twice she alighted on a low, broken pine sapling about four feet high and this I had seen her use but once previously—on April first.” Having constantly found both birds at their respective entrances where the nests contained eggs, whether they were fresh or advanced in incubation together with finding the nest cavities so near the surface of the ground at a time when the ground was extremely dry and the thermometer above 80° in the shade—100° or more in the open where the nests were located, it might appear probable that the heat of the ground was sufficient during a considerable part of the day to continue incubation without the aid of the bird. No other explanation seems reasonable to account for the constant appearance of both birds outside the burrows.

So far as I am aware all authors have held or inferred that the plumage of the sexes is alike. Some speak of the individual variations which are not constant. The birds as I found them were notably different in shade of color and this could frequently be detected as they flew. By placing the birds on their backs, a series of each sex opposite, the difference is marked and constant; the cross-bars of the female being the darker, those of the male almost fading away towards the tail. With the female the cross-bars ranged from Bister on upper breast to Dresden Brown on lower belly while corresponding bands on the male ranged from Prout's brown to tawny olive. The backs of the two sexes show slight differences and are not constant so far as I could determine. In several cases faint cross-bars were detected on the under tail coverts or spots that may be grouped to form a bar.

Measurements of the birds varied considerably especially as to length, but this could be accounted for at least in part by the wearing of the tail, the tip of which was frequently much frayed, doubtless due to wear in the burrows.

MEASUREMENTS

	L.	W.	T.	Trs.
♂ Average	9.08	6.61	3.38	1.94
♀ Average	9.09	6.6	3.31	1.91
♂ Extremes	{ 8:50	6.50	3.25	1.88
	{ 9:50	6.88	3.50	2.12
♀ Extremes	{ 8.63	6.43	3.06	1.88
	{ 9.50	6.88	3.50	2.00

All specimens were adults, taken between February 19 and April 16.

The eggs were of course pure white when blown. The usual

number appeared to be four with five in a few instances. The first eggs were taken April 2d, at which time one burrow had nesting cavity completed but no eggs laid. One nest contained three fresh eggs, probably incomplete. Two nests held four eggs each, one of these clutches being several days advanced in incubation. The fourth clutch—five eggs—was complete and incubation begun. On April 11th four burrows were examined. Two contained four eggs and one held five eggs; all of these were from a third to one-half advanced in time of incubation, while the fourth nest has already been referred to as holding three chicks just hatched and two pipped eggs.

By information gained from older residents I infer this owl is disappearing, in some sections at least, quite rapidly. The country is being settled; many small truckers are already scattered over the district and doubtless before many years these most interesting birds will be classed with the rarer of the Eastern species.

The following titles embraced much of interest pertaining to the Life History of this little Owl:

Scott, W. E. D. *The Auk*, Vol. VI, 1889, p. 249.

Hoxie, Walter, *Ornithologist and Oologist*, XIV, 3, p. 33.

Rhoads, S. N. *The Auk*, IX, p. 892.

Bendire, Maj. C. E. *Life Histories North Am. Birds*, I.

Palmer, Wm. *The Auk*, XIII, p. 99, 1896.

* Kennard, F. H.—*The Auk*, XXXII, April, 1915, p. 154.

THE BIRDS OF THE CAPE FEAR REGION OF THE NORTH CAROLINA COAST

Z. P. METCALF

NORTH CAROLINA STATE COLLEGE
AND EXPERIMENT STATION

For two weeks this past summer I had the pleasure of camping in company with some other biologists on the ocean front a few miles above Cape Fear, and while my main interest was tracing out some of the relations of the animal life to the tidal zones I spent some time studying birds and always had an open ear and eye for our feathered friends. The region in which we were located is one that has not been much visited by biologists and a brief description of the locality may not be amiss. Starting with the Cape Fear River at Wilmington we find that we are some nine miles, as the crow flies, from the ocean, but the ocean